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# Performance Check 1 on MA6 Mask Aligner

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# Performance Check 1 on MA6 Mask Aligner

## Keywords

MA6 mask aligner

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# On-site Inspeccion 1 on MA6 Mask Aligner (Graduate Student Fellow Program)

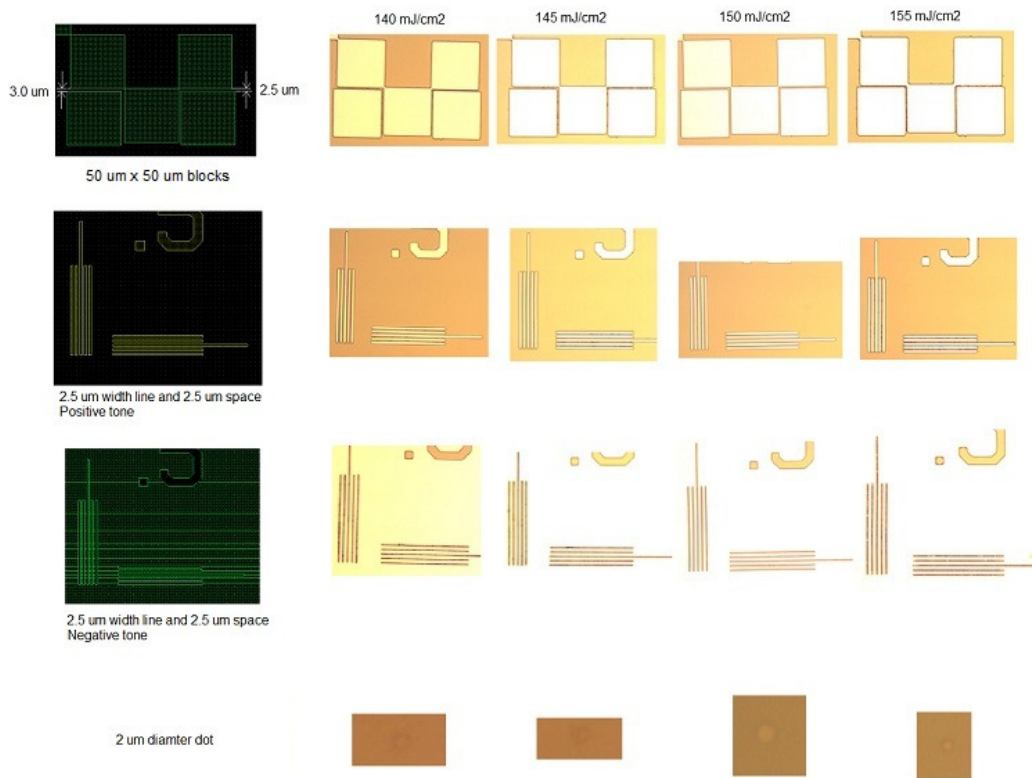
## Exposure

Prepared by Jonathan Bryan (8/26/2014)

### S1813 Coating

- Cleaning: Acetone Sonic-5min, IPA Sonic-5min
- Lithography tool: MA6
- HMDS coating for promoting adhesion:
  - Dehydrate wafer: 150 °C, 5 min, on the hot plate
  - Spinner: 5000 rpm 60 sec
- S1813 coating:
  - Spinner: 5500 rpm, 60sec (Acceleration 500 rpm/sec)
  - Pre-bake before exposure: 110 °C, 5 min, on the hot plate.
- Exposure: 140, 145, 150, 155, 160 mJ/cm<sup>2</sup>
- Develop: MF-319, 30 sec

The best condition is found to be at 150 mJ/cm<sup>2</sup>.



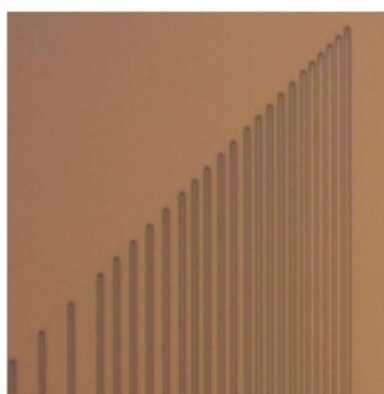
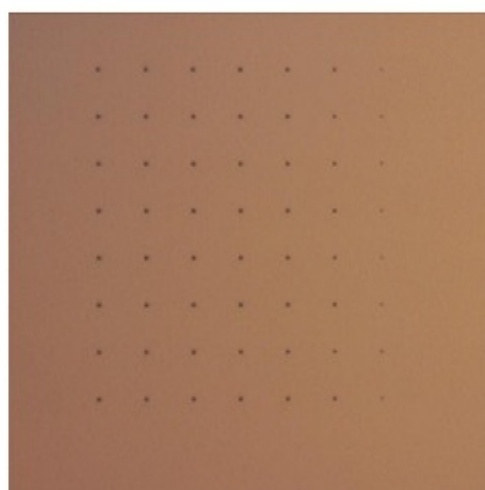
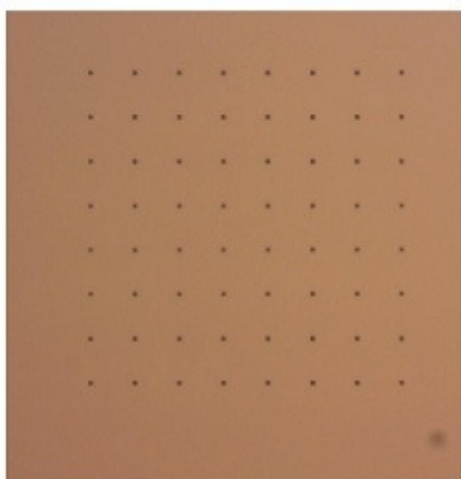
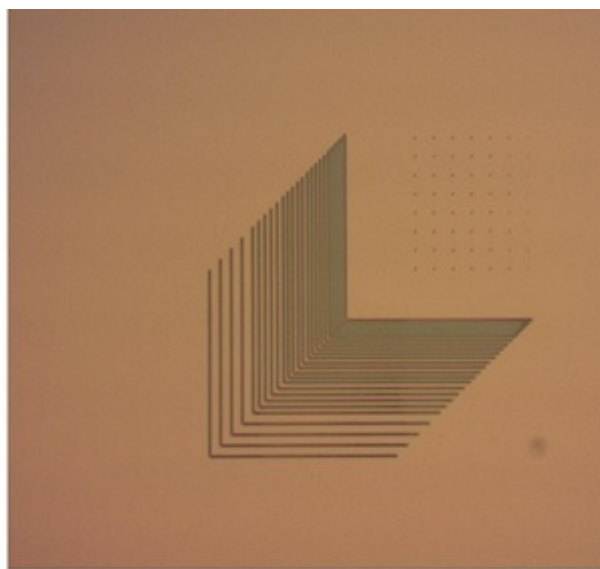
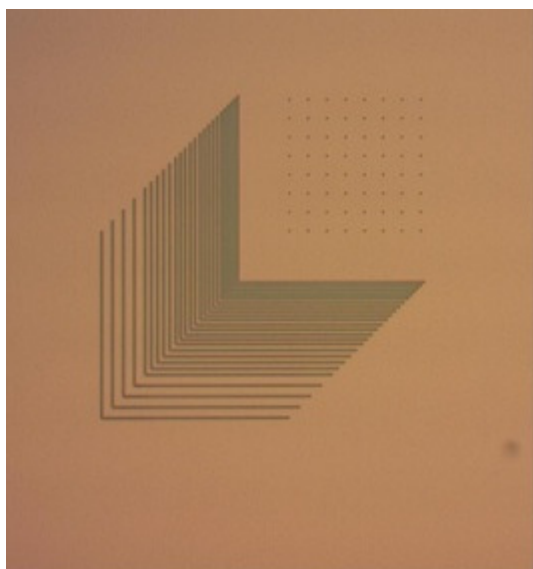
## **S1818 Coating**

Prepared by Jonathan Bryan (10/17/2014)

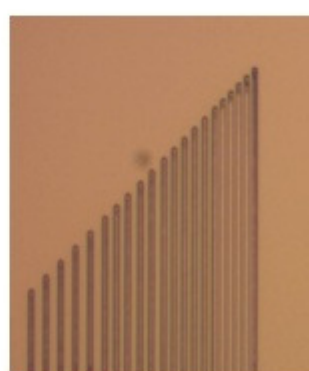
- Cleaning: Acetone Sonic-5min, IPA Sonic-5min
- Lithography tool: MA6
- HMDS coating for promoting adhesion:
  - Dehydrate wafer: 150 °C, 5 min, on the hot plate
  - Spinner: 5000 rpm 60 sec
- S1818 coating:
  - Spinner: 5500 rpm, 30sec (Acceleration 500 rpm/sec)
  - Pre-bake before exposure: 110 °C, 5 min, on the hot plate.
- Exposure: 140, 150, 155 mJ/cm<sup>2</sup>
- Develop: MF-319, 60 sec
- Sample prepared for:
  - 140 mJ/cm<sup>2</sup> and 30s development time
    - Development time was too low – lousy result
  - 150 mJ/cm<sup>2</sup> and 60s development time
  - 155 mJ/cm<sup>2</sup> and 60s development time

### **1.5 μm width Line and Various Spaces and 1.5 μm diameter dots**

- Distances between 1.5 μm width lines: 10, 5, 4, 3, and 2 μm.

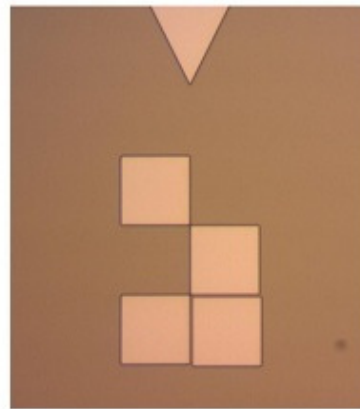


150 mJ/cm<sup>2</sup>

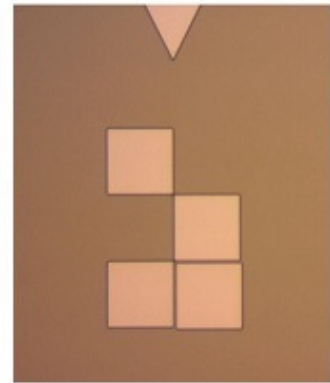


155 mJ/cm<sup>2</sup>

### 50 $\mu\text{m}$ x 50 $\mu\text{m}$ Block and 1.5 $\mu\text{m}$ Space



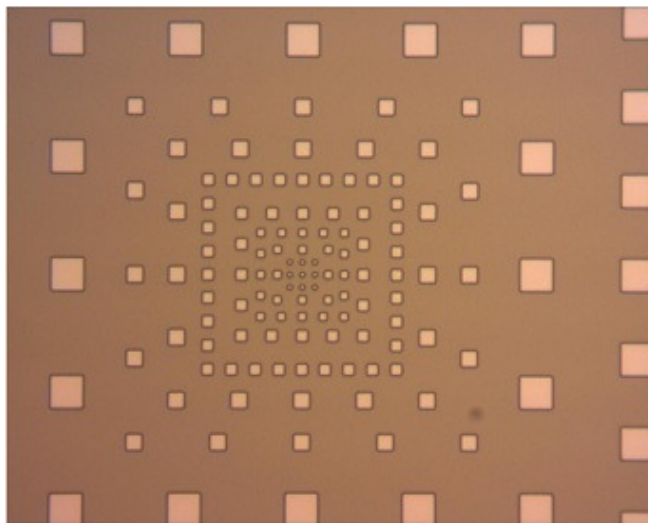
150 mJ/cm<sup>2</sup>



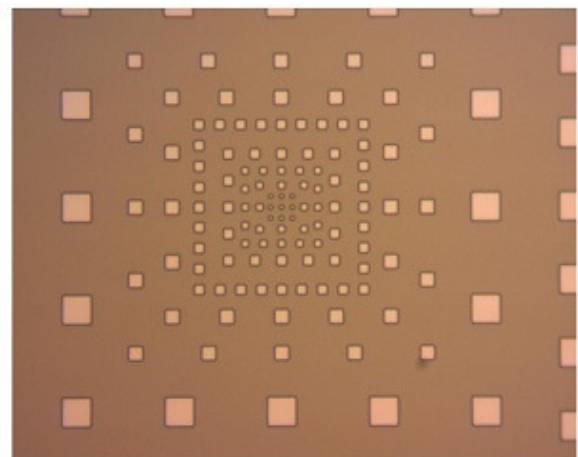
155 mJ/cm<sup>2</sup>

### Various Blocks

- Sizes of blocks: 3, 5, 7, 10  $\mu\text{m}$ , and larger.



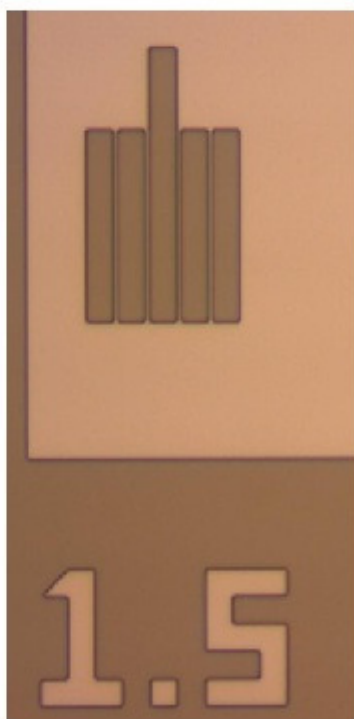
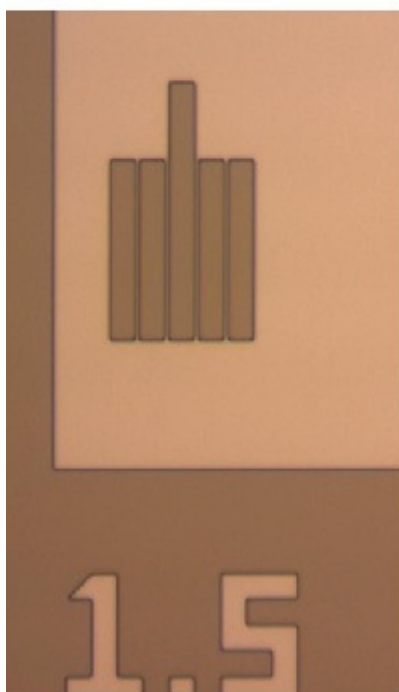
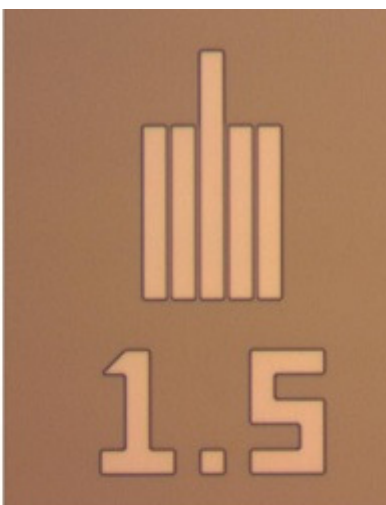
150 mJ/cm<sup>2</sup>



155 mJ/cm<sup>2</sup>

### Positive and Negative Tones

- Line width: 10  $\mu\text{m}$
- Line gap: 1.5  $\mu\text{m}$



150 mJ/cm<sup>2</sup>

155 mJ/cm<sup>2</sup>